FACT SHEET: HUDSON RIVER
Fish Health Assessment

HUDSON RIVER TRUSTEES
ASSESSING AND RESTORING YOUR NATURAL RESOURCES

Hudson River Natural Resource Damage Assessment

Past and continuing discharges of polychlorinated biphenyls (PCBs) have contaminated the natural resources of the Hudson River. The Hudson River Natural Resource Trustees – New York State, the U.S. Department of Commerce, and the U.S. Department of the Interior – are conducting a natural resource damage assessment (NRDA) to assess and restore those natural resources injured by polychlorinated biphenyls (PCBs), a hazardous substance and a known human carcinogen.

PCBs are a major concern because they persist in the environment for many decades, can be harmful at low concentrations, and accumulate in living creatures. PCBs pose health hazards to Hudson River fish, mammals, birds, and other wildlife and are found at concentrations orders of magnitude greater than those considered protective of human health or the environment. For example, PCBs in fish sampled from the Hudson River routinely exceed 0.11 ppm, which is the New York State guidance value to protect wildlife that eats fish.

This factsheet provides information about the results of one of the studies being conducted by the Trustees under the Hudson River NRDA, the "Hudson River Fish Health Assessment."

The Fish Health Assessment investigated whether fish in areas of the Hudson River highly contaminated with PCBs show more indicators of certain types of injury than fish from reference areas that are less contaminated with PCBs. Fish were examined for evidence of internal and external lesions, tumors, or other abnormalities and diseases, parasites, and other immune system indicators. Fish were collected from four sites in the fall of 2001. Two sites were located in the most contaminated reach of the Hudson River, downstream of the industrial sources of PCBs at Hudson Falls and Fort Edward. The other two sites were reference sites, with one located upstream of Hudson Falls and one located in a waterbody known to have very low levels of contamination. Fish species targeted for this study were brown bullhead, smallmouth bass, and yellow perch. Tissue samples were collected to investigate a variety of biological impacts that can be caused by PCB contamination but PCBs were not measured in any of the fish collected, as PCBs in fish from these sampling locations were well characterized from previous studies.

The results of the Fish Health Assessment have been published as: Pinkney, Alfred E., Mark S. Myers, and Michael A. Rutter. 2016. Histopathology of brown bullhead (*Ameiurus nebulosus*), smallmouth bass (*Micropterus dolomieu*), and yellow perch (*Perca flavescens*) in relation to polychlorinated biphenyl (PCB) contamination in the Hudson River. Science of the Total Environment, http://dx.doi.org/10.1016/j.scitotenv.2016.09.209.

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Results of the Fish Health Assessment

These researchers report the following findings regarding the Fish Health Assessment:

- In bullhead and bass, no lesions or changes in gonadal development were associated with PCB exposure.
- In fall collected yellow perch, prevalence and severity of oocyte atresia (re-absorption of immature ovarian follicles) were statistically significant ($p<0.001$) but were assumed to be weakly associated with PCBs because of the high prevalence also detected in reference area perch.
- A follow-up yellow perch histopathology and development study conducted at time of spawning is recommended to better elucidate effects of PCBs on gonads.

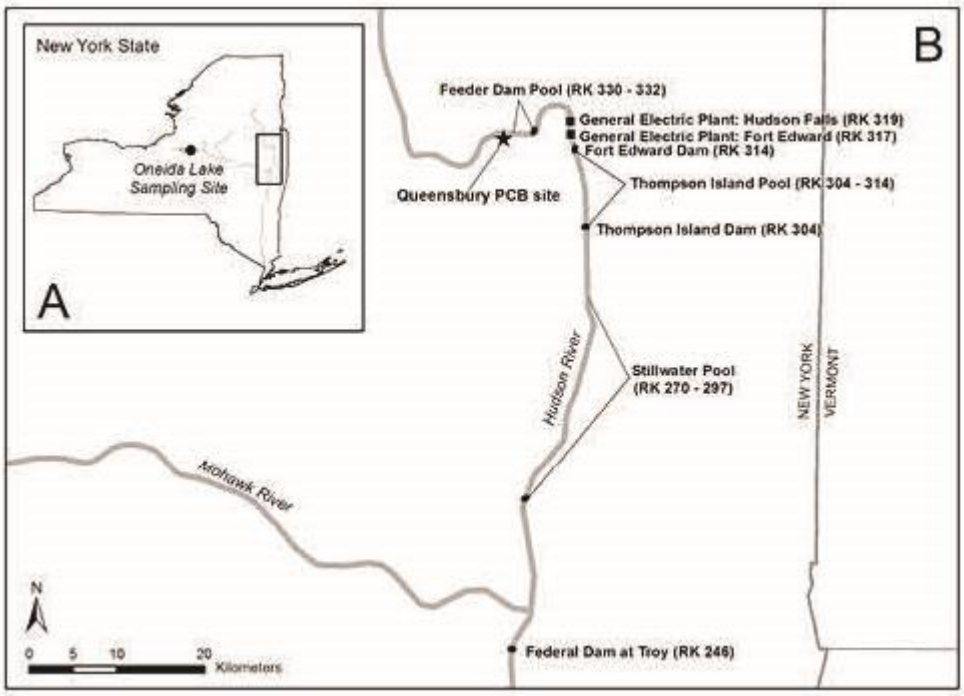

Figure 1: Map of New York State showing fish collection areas and Hudson River PCB sources.
A: Overall map of New York State **B:** Hudson River sampling locations from which fish from the study were taken: Feeder Dam Pool, Thompson Island Pool, and Stillwater Pool. RK=River Kilometer from the tip of Manhattan (RK 0).

For more information:

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